

June 8, 2018

Mr. Paul Marinelli  
Department of Conservation and Recreation  
Office of Dam Safety  
251 Causeway Street  
Boston, MA 02114

Re: **June 2018 Follow-Up Inspection  
MA03414 Bulloughs Pond Dam  
Newton, Massachusetts**  
(Pare Project No.:09124.56/152)

Dear Mr. Marinelli:

As requested by the MADCR Office of Dam Safety (MADCR), Pare Corporation (Pare) completed a follow-up inspection of conditions at the Bulloughs Pond Dam located in Newton, Massachusetts on June 7, 2018. The Bulloughs Pond Dam is currently classified as a significant hazard potential intermediate sized dam and is currently considered to be in Poor<sup>1</sup> condition, consistent with that reported within the past follow up inspections completed in May 2017 and December 2017. The dam has been found to have the following deficiencies:

1. Unwanted vegetation in areas of the dam including large trees along the downstream slope;
2. Scarping along the upstream slope and bare soils prone to erosion along the downstream slope
3. Areas of displaced stones from the low-level outlet downstream headwall;
4. Areas of scour along the downstream channel including at the low-level outlet and along the left and right banks. If erosion of the left bank continues, it could encroach on the toe of the downstream slope;
5. Mortar missing from some joints of the spillway training walls
6. Additional maintenance deficiencies and potential dam safety concerns.

Bulloughs Pond Dam, as shown on Figure 3: Site Sketch, consists of an approximate 170-foot long earthen embankment dam with a 35-foot long concrete weir spillway and a low-level outlet consisting of gated twin 24-inch diameter conduits. At the time of the inspection, the level of the impoundment was near normal pool levels with approximately half an inch of flow over the spillway weir. During the current inspection, there was no apparent indication of significant additional deterioration beyond that previously observed.

It is critical to note that the condition of the dam is evolutionary in nature and depends on numerous and constantly changing internal and external conditions. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future.

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<sup>1</sup> The recommended condition of the dam is based upon the limited scope of the follow-up inspection. In the absence of more detailed inspections and/or evaluations, conservative assumptions regarding uncertainties were made to arrive at the noted condition of the dam. A more detailed review of conditions may suggest a different condition rating



June 8, 2018

Mr. Paul Marinelli

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We trust that the attached Follow-up Inspection Form meets the current requirements for the Bulloughs Pond Dam. Should you have any questions please feel free to contact me at 508.543.1755 or via email at [aorsi@parecorp.com](mailto:aorsi@parecorp.com).

Sincerely,

PARE CORPORATION

A handwritten signature in blue ink that reads "Allen R. Orsi".

Allen R. Orsi, P.E.  
Vice President



Attachment: Office of Dam Safety Follow-up Dam Inspection Form w/ attachments



**Commonwealth of Massachusetts  
Department of Conservation and Recreation  
Office of Dam Safety Follow-up Dam Inspection Form**

**Dam Name:** Bulloughs Pond Dam  
**Dam Owner:** Unknown

**Nat. ID Number:** MA03414  
**Hazard Potential:** Significant (Class II)  
**Location of Dam (town):** Newton  
**Coordinate location (lat,long):** 42.34185°N / 71.20524°W  
**Date of Inspection:** June 7, 2018  
**Weather:** 75°F, Cloudy

**Consultant Inspector(s):** Pare Corporation, Allen R. Orsi, P.E.

**Others in Attendance at Field Inspection:** None

**Attachments:** Figure 1: Locus Plan  
Figure 2: Aerial Plan  
Figure 3: Site Sketch  
Photographs  
Inspection Limitations

**I. Previous Inspection date/Overall Condition:**

- May 2, 2017 Follow Up Inspection, Pare Corporation / Poor condition
- December 20, 2017 Follow Up Inspection, Pare Corporation / Poor condition

**II. Previous Inspection Deficiencies:**

*From the previous Follow Up Inspections by Pare Corporation:*

- Unwanted vegetation in areas of the dam including large trees along the downstream slope;
- Scarping along the upstream slope and bare soils prone to erosion along the downstream slope;
- Deterioration / potential unstable headwall at the downstream end of the low-level outlet with observed scour / displaced riprap within the channel;
- Areas of scour along the downstream channel including at the low-level outlet and along the left and right banks. If erosion of the left bank continues, it could encroach on the toe of the downstream slope;
- Mortar missing from some joints of the spillway training walls; and
- Additional maintenance deficiencies and dam safety concerns.

**III. Overall Condition of Dam at the Time of the Current Follow-up Inspection:**

- a. State the current condition:** *Poor (Based on a limited scope of inspection/evaluation)*
- b. Have conditions changed since the previous inspection?** *No.*

**IV. Comparison of Current Conditions to Condition Listed in Previous Phase I Inspection Report:**



- a. **Have any of the deficiencies listed in the previous Phase I Inspection Report worsened?** *No Phase I*
- b. **If yes, list the changes.** Not Applicable
- c. **Are there any additional deficiencies that have been identified in the current inspection?** *No*
- d. **If yes, list the deficiencies and describe.** Not Applicable

**V. Dam Safety Orders:**

- None Available

**VI. Maintenance:**

1. **Indicate if there exists an operation and maintenance plan for the dam.** No formal operational or maintenance plan is known to exist.
2. **Indicate if it appears the dam is being maintained.** As indicated by Newton DPW staff present onsite during the May 2017 inspection (unrelated to the inspection), the Town regularly utilizes the low level outlet to control the pond level during storm events and as part of seasonal drawdowns. It also appears that regular maintenance is performed along the crest of the dam.

**VII. Recommendations:**

In general, the condition of the dam appears similar to that observed during the May 2017 Follow Up Inspection. As such, the recommendations listed therein remain valid as listed below with revisions highlighted in italics:

*Studies and Analyses*

1. Determine dam ownership.
2. Complete a detailed visual inspection of the dam and appurtenances (Phase I).
3. Underwater inspection of components of spillway and lower level outlet that were not accessible during this and past follow up inspections.
4. Complete survey to verify the height of the dam and to support additional evaluations.
5. Complete additional evaluations to determine/verify the appropriate hazard potential classification.
6. Complete a stability analysis for the embankment section.
7. Complete a detailed Hydraulic/Hydrologic (H&H) analysis.
8. Evaluate erosion along the downstream channel to determine the need (if any) to stabilize areas of erosion.
9. Prepare a formalized Operations and Maintenance Manual.
10. Prepare an Emergency Action Plan.

*Yearly & Recurrent Maintenance Recommendations*

1. Perform regular monitoring and inspection of the dam and appurtenant structures.
2. Complete/continue regular maintenance activities.

*Repair Recommendations*

1. Clear the dam of unwanted vegetation. Grub systems and establish adequate surface protection;



2. Install adequate surface protection including riprap along the upstream slope and grass along the downstream slope.
3. Repair the low-level outlet downstream headwall.
4. Provide adequate scour protection along the banks of the downstream channel.
5. Repoint the joints of the spillway training walls.

*Remedial Measures*

1. Undertake additional repairs as identified to be required through the completion of the recommended inspections and studies.

**VIII. Other Comments or Observations:**

During the current follow up inspection the following was noted:

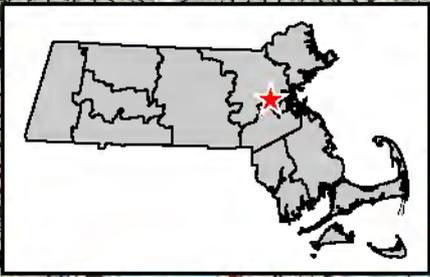
- The impoundment appeared to be near normal operating levels.
- Minor debris is present along the spillway crest.
- The upstream slope is densely overgrown with a variety of plants, weeds, and other vegetation. Access for inspection was limited.
- Iron oxide stained seepage / groundwater flow continues along the base of the downstream end of the boulder wall that lines the right side of the downstream channel. The flow was approximated at 10 GPM (consistent with past follow up inspections).
- Mortar is missing from some joints of the training walls of the spillway.
- Low flow, typical of previous inspection, was observed dripping from both of the low level outlet pipes.

**IX. Updated Site Sketch with Photo Locations:** Attached

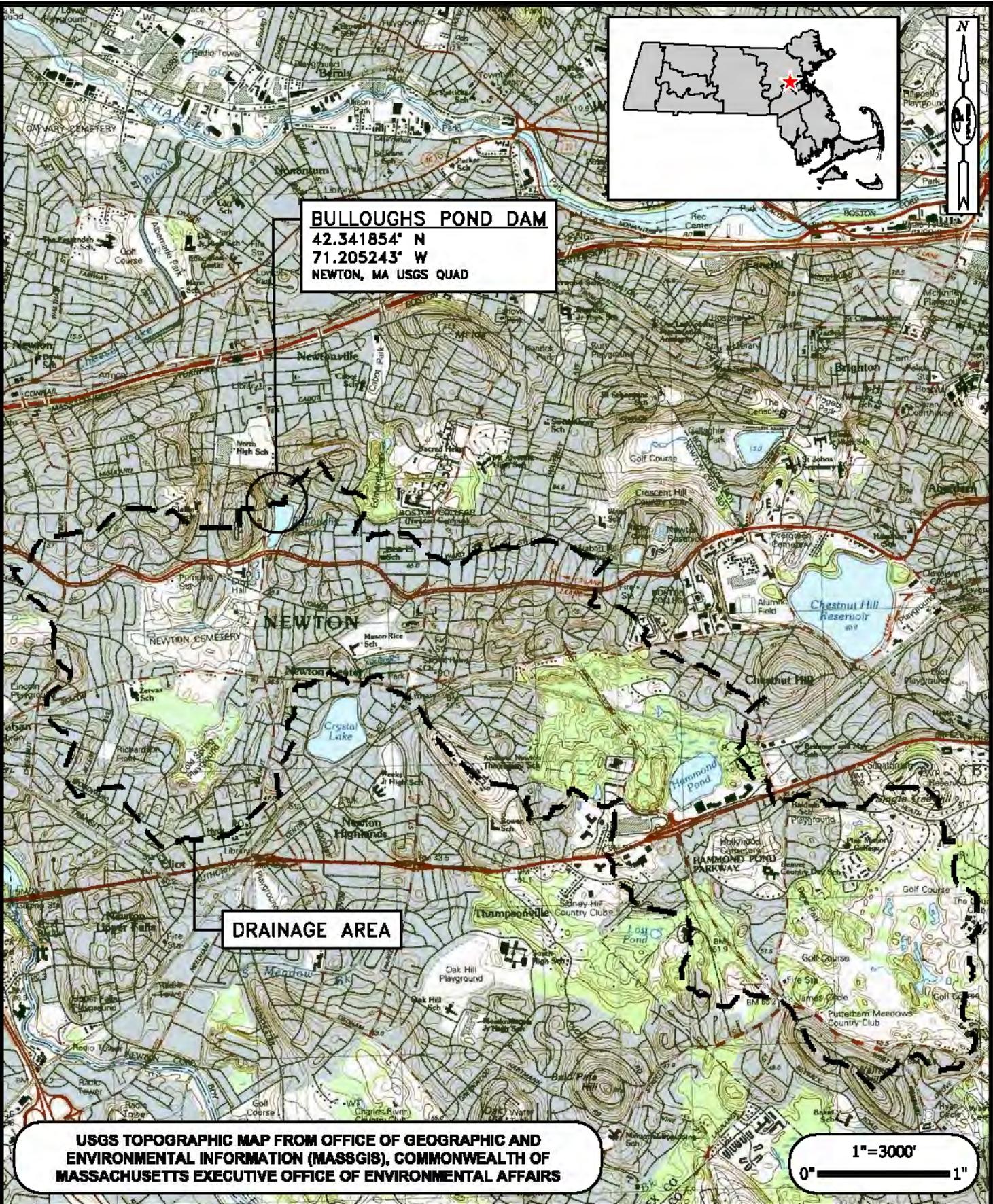
**X. Updated Photos:** Attached

**XI. Copy of Locus Map from Phase I Report:** Attached

**XII. Other applicable attachment:** Figure 2: Aerial Plan, Inspection Limitations



**BULLOUGH'S POND DAM**  
 42.341854° N  
 71.205243° W  
 NEWTON, MA USGS QUAD



**USGS TOPOGRAPHIC MAP FROM OFFICE OF GEOGRAPHIC AND ENVIRONMENTAL INFORMATION (MASSGIS), COMMONWEALTH OF MASSACHUSETTS EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS**

1"=3000'  
 0" ————— 1"

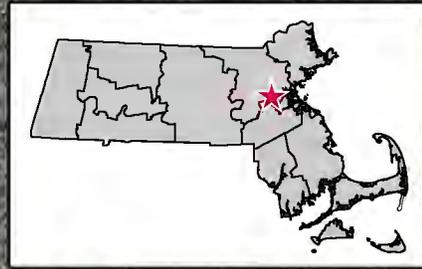


**BULLOUGH'S POND DAM**  
 MA03414  
 NEWTON, MASSACHUSETTS  
 OWNER: UNKNOWN

**LOCUS PLAN**  
 DECEMBER 2017      **FIGURE 1**

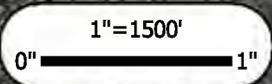


SCALE: 1=150'



**BULLOUGHS POND DAM**  
42.341854° N  
71.205243° W  
NEWTON, MA USGS QUAD

USGS ORTHOPHOTO FROM OFFICE OF GEOGRAPHIC AND ENVIRONMENTAL INFORMATION (MASSGIS), COMMONWEALTH OF MASSACHUSETTS EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS



### BULLOUGHS POND DAM

MA03414

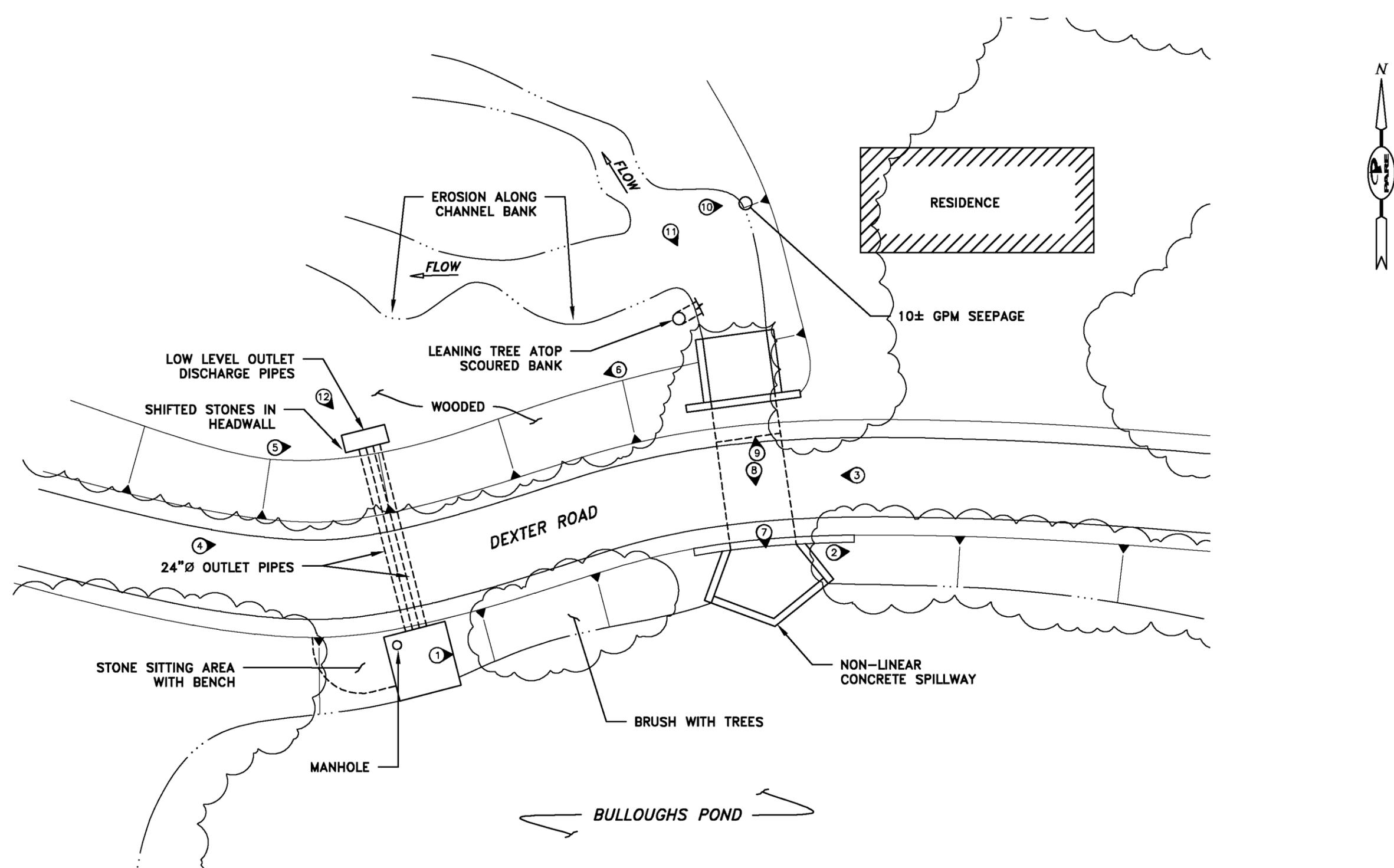
NEWTON, MASSACHUSETTS

OWNER: UNKNOWN

AERIAL PLAN

DECEMBER 2017

FIGURE 2



REVISIONS:	

PROJECT NO.:	09124.56/152
DATE:	JUNE 2018
SCALE:	AS NOTED
DESIGNED BY:	ARO
CHECKED BY:	MED
DRAWN BY:	LMC
APPROVED BY:	ARO

**NOTES AND LEGEND**

1. PLAN DEVELOPED FROM NOTES TAKEN DURING THE INSPECTION AND AVAILABLE AERIAL IMAGERY FROM MASSGIS. INFORMATION IS PROVIDED FOR REFERENCE PURPOSES ONLY.

Ⓜ DENOTES APPROXIMATE LOCATION AND DIRECTION OF PHOTOGRAPH.

**SITE SKETCH**  
 SCALE: 1"=30'±



Photo No. 1: Upstream slope right of the low level outlet.



Photo No. 2: Upstream slope right of the spillway.



Photo No. 3: Crest from near the right abutment looking left.



Photo No. 4: Crest from near the left abutment looking right.



Photo No. 5: Downstream slope from near the left abutment.



Photo No. 6: Downstream slope from left of the spillway looking left.



Photo No. 7: Overview of the spillway weir.



Photo No. 8: Spillway from downstream.



Photo No. 9: Downstream channel at the spillway.



Photo No. 10: Iron oxide stained flow from the downstream bank along the right side of the downstream channel.



Photo No. 11: Erosion of the left bank beneath a leaning tree along the left side of the downstream channel.



Photo No. 12: Low level outlet discharge headwall and standing water in the downstream channel.



## VISUAL DAM INSPECTION LIMITATIONS

### Visual Inspection

1. The assessment of the general condition of the dam is based upon available data and visual inspections. Detailed investigations and analyses involving topographic mapping, subsurface investigations, testing and detailed computational evaluations are beyond the scope of this report.
2. In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection, along with data available to the inspection team.
3. In cases where an impoundment is lowered or drained prior to inspection, such action, while improving the stability and safety of the dam, removes the normal load on the structure and may obscure certain conditions, which might otherwise be detectable if inspected under the normal operating environment of the structure.
4. It is critical to note that the condition of the dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through continued care and inspection can there be any chance that unsafe conditions be detected.

### Use of Report

1. The applicability of other environmental permits (ie., NOI, PGP, Water Quality Certificate, etc.) needs to be determined prior to undertaking maintenance activities that may occur within resource areas under the jurisdiction of MADEP, the local conservation commission or other regulatory agency.
2. This report has been prepared for the exclusive use of the Massachusetts Department of Conservation and Recreation for specific application to the Bulloughs Pond Dam in accordance with generally accepted engineering practices. No other warranty, expressed or implied, is made.
3. This report has been prepared for this project by Pare. This report is for preliminary evaluation purposes only and is not necessarily sufficient to support design or repairs or recommendations or to prepare an accurate bid.